

## AUSTRALIAN HESPERIIDAE. X.

ON HESPERILLA DONNYSA HEWITSON, 1868.

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This species was named by Hewitson in 1868, when in *Descriptions Hesperidae*, pt. ii, p. 39, he described a male and female giving as locality Australia (Moreton Bay). In his *Exotic Butterflies*, v, 1874, he described and figured the upperside of the male from the same locality, but omitted any mention of the female. In Kirby's *Catalogue of the Hewitson Collection*, 1879, p. 235, one specimen only is given with the locality Australia. I have seen the holotype male in the British Museum, which has a label "Austl." in Hewitson's handwriting, and have before me an excellent coloured drawing of it, which was carefully checked by Brigadier H. W. Evans and myself. It should be noted that the size given for *donnysa* is the same as Hewitson gave for *petalia* and *doclea*, described in 1868 at the same time. Therefore, as the holotype shows, it is not a very large specimen. Also these two species, as well as others, were from Moreton Bay and still have that locality label in Hewitson's handwriting.

I have reviewed this species and its races in *These PROCEEDINGS*, 1927, p. 278; 1932, p. 226; 1937, p. 118. I was never satisfied that Brisbane (Moreton Bay) was the correct locality for the holotype, but until last year I had seen only one poor male from the Brisbane district. Dr. C. P. Ledward has now bred several specimens at Burleigh Heads, about fifty-five miles south of Brisbane and from a similar type of country as no doubt existed near Brisbane in the earlier days. These specimens are distinctly larger than the holotype and somewhat different.

Both descriptions and figure given by Hewitson agree fairly well with the holotype male. His description of the female in 1868 as "without the small yellow spot of the anterior wing and the central orange of the posterior wings" shows it is not the female of *donnysa*. Females in all the races always have these characters. Hewitson must have realized this later, as he omits mention of the female in 1874 and there was only one specimen of *donnysa* in his collection over this name when he died. My suggestion is that his so-called female of 1868 had the label Moreton Bay and this locality was unwittingly transferred to his description of 1874. There is nothing to show that the holotype male had any locality beyond Australia as far as Hewitson was concerned. In 1936, I carefully searched for Hewitson's Australian specimens and found nearly all those mentioned by Kirby. I was not able to find any specimen that I could consider the so-called female of *donnysa*, 1868.

Since there is no direct evidence that the holotype came from Moreton Bay—indeed the evidence points the other way—it is necessary to select a suitable locality for it. Six entomologists have selected specimens from Sydney as agreeing best with the coloured drawing in my possession, four of them having picked the same specimen. I, therefore, select Sydney as the locality of the holotype. This conforms best with what is known, and the food-plant of the larvae was growing within five miles of the centre of Sydney a few years ago and is still found a little further away.

## HESPERILLA DONNYSA Hewitson, 1868.

This is the most widespread of that peculiarly Australian subfamily, the Trapezitinae. I have found some stage of its life-history in all the Australian States. On the east coast it extends as far north as Brisbane and on the west coast as far north as Geraldton. As well as being found within a few yards of the sea, it also occurs in the mountains up to 3,500 feet in New South Wales, Victoria, South Australia and Tasmania. The food-plants of the larvae are several species of *Gahnia*, differing in different localities and at different altitudes. The larva and pupa have been figured by me in "What Butterfly is That?", 1932, Pl. xxxi. The pupal head piece is very distinctive and does not vary to any appreciable extent in the various races.

Owing to its wide range, it is not surprising that it has developed into races. As a general rule the southern races have the markings on the upperside darker in colour and these usually have in the female one or two spots below the orange patch of the hindwing. Specimens from the sea coast are generally a paler brown above than those from the mountains. The individuals of the various races vary amongst themselves. This is not surprising as I have selected for the collection in the Australian Museum over 400 specimens from at least 1,000 specimens that have passed through my hands. It is difficult to give a general description that will cover all the races, but the following will be sufficient to denote the species and fuller details of the subspecific differences are given later.

*Male.* Forewing, apex acute, termen nearly straight. Above brown, with a large spot near end of cell, usually three small subapicals not always in a straight line, sometimes small spots in 4 and 5, larger spots in 2 and 3, these spots hyaline, usually with an opaque spot in 1a, sex mark from vein 4 nearly to termen. Hindwing brown with a central opaque patch. Forewing beneath, apex grey, hyaline spots as above, remainder of cell yellowish, a whitish patch on dorsum near tornus. Hindwing grey to brown with a spot in centre of cell, beyond which is a series of five spots *in a straight line* and another near base of 6.

*Female.* Forewing with termen not so straight as in male, all hyaline spots usually larger, usually hyaline spots in 4 and 5, always an opaque spot in 1a, sometimes another above it. Hindwing with central patch more conspicuous than in male. Beneath as in male.

Besides the shape of the wings, the most important character is the row of five spots *in a straight line* on hindwing beneath. These are variable in size and very rarely one or more may be absent. They may be small brown dots, but when large they often appear as dark rings with pale centres. This is more often found in the cell spot and the spots at either end of the straight line of spots; sometimes there is an additional spot in 7.

The holotype male *donnysa* is in the British Museum, those of the races in the Australian Museum, Sydney.

H. DONNYSA DONNYSA Hew., 1868. Male. Forewing above typically with moderate cell spot, three subapicals not in a straight line, moderate spots in 2 and 3, all yellow hyaline, a small opaque spot in 1a, yellow, sex mark thin, black from vein 4 nearly to termen. Hindwing with central darker yellow patch divided by veins 3 and 4. Beneath, apex of forewing and hindwing grey to reddish-grey, forewing with cell almost wholly yellow and pale patch on dorsum; hindwing with dots brown and small. Female. Larger than male, above spots larger and darker; beneath much as in male. It is double brooded.

I have before me seven males, bred by me from within a few miles of Sydney. Four of these have, as in the holotype, one opaque spot in 1a of forewing, two with none and one with two. Also six females, one of which has rings with paler centres on the underside of the hindwing. These were all bred by me from pupae found on a coarse species of *Gahnia* growing near the coast. Some further distance away they have been found on at least two other species of *Gahnia*. Specimens of this race in the Australian Museum Collection are from National Park to Lake Macquarie. The underside is figured in These PROCEEDINGS, 1927, Pl. xxvi, fig. 6.

H. DONNYSA ICARIA, n. subsp. I have before me one male, two females from Burleigh Heads, S. Qd., and an old male from Stradbroke I. The male is larger and darker brown than the typical race and the spots are smaller and paler, especially that of the hindwing. The holotype male (Burleigh, 19.x.1940) has the three subapicals in a straight line with a minute dot below and there is no opaque spot in 1a. Beneath, the apex of forewing and the hindwing are pinkish-grey and there are brown spots in 6 and 7. Dr. C. P. Ledward has two males, neither having the dot below the subapicals, one has no opaque spot in 1a, the other a minute dot. Both have the pinkish-grey underside. The females differ in the same way from females of the typical race. None have spots in 4 and 5 of the forewing. In one specimen the underside has the pink much deeper in colour. Dr. Ledward has bred this race in small numbers in spring and autumn. The larvae feed on *Gahnia erythrocarpa*. No specimens of *donnysa* have been recorded

from between Burleigh and Lake Macquarie, but some years ago I saw two females taken on the Richmond River, N.S.W.

*H. DONNYSA SAMOS*, **n. subsp.** This is a small dark mountain race. Male. Above with spots smaller and paler, especially the three subapicals, of which the middle is the smallest. The holotype male has an opaque spot in 1a, but in others this may be absent. The general colour on the underside is grey; the cell of the forewing has the yellow restricted so that the cell spot is very prominent; there is an additional brown spot in 7 on the hindwing. The female is similar to the male, but of different shape and larger. The holotype male is from a series of five males and three females from Blackheath, N.S.W., bred in November and December, 1934; a male of the series has only the lowest subapical spot present, and sometimes the spots of the underside of the hindwing are brown rings.

This race is very common on the Blue Mts., above 2,000 ft. I have collected extensively there and found it only in November and December with one specimen on 1st January, so it seems to have only one brood. The larvae feed on *Gahnia microstachya*. It is figured as *donnysa* in Butt. Aust., 1914, fig. 634, and 1927, Pl. xxvi, figs. 1, 2.

*H. DONNYSA PATMOS*, **n. subsp.** This is the Victorian race. It is about the size of the previous race, but the general colour above is paler brown and the spots are larger. In the holotype male and others there are two opaque spots in 1a of the forewing. The patch on the hindwing is larger. On the underside the cell of forewing generally has a greater extent of yellow. The general colour is variable and some of the spots of the hindwing may be brown rings. The female is similar to the male, larger and of different shape. The holotype male is from a series of eight males and five females from Mt. Evelyn (A. L. Brown) taken in November and December, 1933. One of the males has a spot in 5 of the forewing and a female a spot in cell, above the patch of hindwing on the upperside.

It is a common species in the Dandenong Ranges where it has been taken from November to 8th January in many localities. It has also been taken near Moe and near Gisborne. Specimens from the eastern side of Port Phillip on the flat country also seem to belong to this race which apparently has only one brood. It is figured as *donnysa* in Butt. Aust., 1914, fig. 633.

*H. DONNYSA FLAVESCENS* Waterh., 1927. This is the very yellow race from the volcanic soil of Altona Bay on the western shore of Port Phillip. Since I described this distinctive race, I have had more specimens from the same locality. The male usually has hyaline spots in 4 and 5 and usually two opaque spots in 1a. On the hindwing in some specimens there are one or two spots below the central patch. To the female the same applies, but the spots are larger, sometimes appearing as an almost continuous band from costa to 1a. One specimen has an extra spot on costa above subapicals. On the hindwing there are usually two spots below the central patch. Beneath in both sexes the colour is very much paler than in the other races and the spots of the hindwing may be brown dots or larger rings with pale centres.

It is found in spring and autumn. My dates are 2nd October to 25th November and 22nd February to 4th April. The larvae feed on a different plant to the other Victorian race. It is figured, 1927, Pl. xxvi, figs. 17, 18.

*H. DONNYSA AURANTIA* Waterh., 1927. This is the Tasmanian race and the markings above are very much deeper in colour than any of the other races. The patch on the hindwing is bright orange and sometimes there are one or two spots below it. At an altitude it has only one brood in January and February, but at the sea coast it probably has two broods. The larvae no doubt feed on *Gahnia* as I have caught it settled on this plant on Mt. Wellington. It is figured, 1927, Pl. xxvi, figs. 5, 21, 22.

*H. DONNYSA DILUTA* Waterh., 1932. This race was described from Mundoo I., near Goolwa, S. Aust. Ten specimens were caught there by Mr. F. M. Angel in March, 1907, flying about *Gahnia trifida*. At that time I doubt if more than five other specimens of *donnysa* were known from South Australia. Since then, thanks to the efforts of F. M. Angel, F. E. Parsons and M. W. Mules, over 100 specimens are in the Australian Museum from many localities and they possess numerous specimens themselves. From an examination of these specimens three races are now indicated from South Australia. With this Mr. Angel concurs and has arrived at the same distribution from the available

material as I have done. As better specimens are now available, I would add that *diluta* is as variable as the other races, paler in colour, both above and beneath, than races from an altitude and rarely has any spots below the patch of the hindwing. The sex mark in the male is duller and slightly wider than the typical race. On the underside there is generally a pinkish suffusion.

I would place specimens from Kingston and Robe with this race as well as a male from Tintinara sent me by Mr. Parsons. It is found in spring and autumn.

**H. DONNYSA FLAVIA, n. subsp.** This is the yellowish race from the coast near Adelaide and is somewhat like the race *flavescens* from Victoria. Male. Above, pale brown with basal half more or less covered with yellow scales; forewing with three pale subapicals, a small pale spot 5, darker spots in cell and 2 and 3, all hyaline, two opaque spots in 1a, sex mark dull black; hindwing with large central orange patch and often two spots below this and one above. The underside usually has a pinkish tint and the markings of the hindwing may be brown rings with pale centres or brown dots. The female is considerably larger and the spots larger and elongated, especially those in 2 and 3; on the hindwing most specimens have two spots below the orange patch and many a spot above it.

The holotype male is from a series from West Beach (Angel, 9.x.1938) and I have others very similar to it from near Henley Beach (Parsons). It is a variable race, the spot in 5 is sometimes absent and that in 4 may be present or absent. Some females have the yellow suffusion very extended. The larvae feed on *Gahnia trifida* and although the food-plant is abundant, seem to confine themselves to certain patches. The spring brood occurs from September to November and is on the wing six weeks before the race from the Ranges. The autumn brood is found in March and April and has the yellow suffusion more restricted.

**H. DONNYSA DELOS, n. subsp.** This is the fine dark race from the Mt. Lofty Ranges. I have selected the holotype from a series from Mt. Lofty (Mules, Nov. 1933). Male. Above, dark brown, large cell spot with a silky sheen, three paler subapicals, spots in 2 and 3, hyaline, opaque spot in 1a; hindwing with central patch paler and rarely with one or two spots below it. Beneath more or less pale brown with markings of hindwing usually brown dots, but cell spot often a brown ring with pale centre. Female much larger, spots larger and more markedly silky. A greater number of specimens have one or two spots below the patch of hindwing.

This race occurs in the Mt. Lofty Ranges at about 1,000 ft., wherever *Gahnia psittacorum* occurs. It has been recorded from 31st October to 6th December from Aldgate, Bridgewater, Mylor and Woodside. I would also place here specimens from Mt. Compass and Second Valley. Mr. Angel agrees with this. This is a very dark race compared with the previous one and very different from it. The spots below the central patch of the hindwing which are a feature of the previous race are not so often present in this. Some of the specimens are very large.

**H. DONNYSA ALBINA**, Waterh., 1932. This is the race from S.W. Australia, typically from Bunbury. It is separated from the others by the subapicals and spots in 2 and 3 of the forewing being whiter than the other races. I have had further specimens from Mr. Whitlock who has taken this race at Bunbury from 13th October to 10th December and from 27th February to 19th April.

**H. DONNYSA GALENA** Waterh., 1927. This is another yellowish race bred by me from pupae found on a species of *Gahnia* at Geraldton, W. Aust. It is figured, 1927, Pl. xxvi, figs. 9, 10, 13, 14.

From what I have set out above it will be seen that *H. donnysa* is a very remarkable and variable species. The amount of material to hand makes the limitations of the races somewhat difficult, as in some cases individuals of one race approach another. Some of the races would by some entomologists be considered distinct species. However, when seen in the cabinet they are easily recognized. It is quite possible that further races will be found in localities other than those mentioned above.

In addition to the friends mentioned above who have sent me specimens, I have to thank Mr. F. M. Angel for material help with the South Australian races and Mr. G. Lyell with the Victorian races.